



## LONG-TERM LEARNING GROWS OUT OF EXPERIENCE

### THE MISSING LINK IN LEARNING

**D**o you pace when trying to memorize a speech? Do your hands move when explaining a complicated idea? If cognition is limited to what goes on in the mind, why do physical actions like these help us think?

Most of us in the field of workplace learning subscribe to a cognitive model that views cognition as the manipulation of mental representations or symbols. The one critical failure of this theory is that it treats people as disembodied beings — abstract minds with no bodies. This model, known as cognitivism, focuses on how humans process information in a way that is similar to a computer. Yet a growing body of research is demonstrating that the computer is not an accurate metaphor for human cognition.

Consider the fact that we experience the world directly through our bodies. Our actions and perceptions are tied to our physicality. This perspective is embraced by proponents of embodied cognition. They suggest that the body is an essential part of the perceptual and mental processes that help us make sense of the world. In other words, the body shapes our thinking. Furthermore, we are often not aware of the influence the body has on cognition.

If reasoning is more than the manipulation of symbols and if experience is grounded in bodily states, the implications for education, self-directed learning and formal training are huge. Embodied cognition supports what innovative and intuitive training professionals already know — that long-term learning grows out of experience and action rather than through the transmission of information from one brain to another.

#### Support for Experiential Learning

Even a partial tilt toward embodied cognition suggests we should rework our training vocabulary and rethink the type of training we design. For example, we're more likely to avoid the pitfalls of training if we speak of designing learning experiences rather than courses. The former implies an active state while the latter connotes passivity. And it may be more expansive to think in terms of being a learning architect rather than an instructional designer or trainer.

In terms of design, gaining knowledge through experience relies on taking action and interacting with the environment. Embodied cognition theory might support learning from a variety of encounters. In the online world, experiential learning may come

from participating in simulations and virtual worlds, solving real-world problems, and interacting through social media.

In the offline world, learners might build experience through role plays in the classroom, working on case studies, apprenticing with mentors, and trying new skills on the job. Embodied cognition theory can help us knock down the artificial limits we place on training.

#### Support for Interactive Learning

Through the lens of embodied cognition, learning and understanding are integrated with sensorimotor actions. For example, research has shown that hand gestures help promote thinking. People gesture while speaking on the phone, probably because it helps them articulate what is hard to explain. And in a milestone study, both congenitally blind and sighted children used similar speech gestures when they were explaining a series of tasks they had completed.

This type of research demonstrates the importance of interactivity in online learning, which involves physical movement and touch. In particular, the gestural user interface found on smartphones, digital tablets and other devices may be most effective in boosting cognition than interactions using a mouse. Gestural interactions with digital objects more closely resemble the interactions we have with physical objects in the environment.

Embodied cognition theory might support the design of rich and deep interactivity in online learning. Furthermore, if the interactions can take place on a device with a gestural interface, they may be more effective. Embodied cognition is a framework that learning architects can use to enhance learning and retention. Knowledge that is grounded in sensorimotor actions and experience is likely to be more robust than knowledge gained from a purely informational communication. The theories and research drawn from embodied cognition provide us with an opportunity to think more broadly about ways that people learn and to reimagine the experiences we design.

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